Instructional Materials Evaluation Criteria – Fifth Grade Mathematics

Title _____ **ISBN#** _____

Established Track Record? YES ☐ NO ☐
If yes, please list research source(s):

Meets National Mathematics Standards? YES ☐ NO ☐

Standard 1: Students will expand number sense to include integers and perform operations with whole numbers, simple fractions, and decimals.

Objectives	Indicators	Covered? Yes	Covered? No	Explanation of Coverage	Percentage of Coverage
Objective 1.1: Represent whole numbers and decimals from thousandths to one billion, fractions, percents, and integers.	a. Read and write numbers in standard and expanded form.				
	b. Demonstrate multiple ways to represent whole numbers, decimals, fractions, percents, and integers using models and symbolic representations (e.g., $108=2x50+8$; $108=10^2+8$; 90% = 90 out of 100 squares on a hundred chart).				
	c. Identify, read, and locate fractions, mixed numbers, decimals, and integers on the number line.				
	d. Represent repeated factors using exponents.				
	e. Describe situations where integers are used in the students' environment.				
Objective 1.2: Explain relationships and equivalencies among integers, fractions, decimals, and	a. Use the number line to order and compare integers, fractions (including mixed numbers), and decimals.				

percents.	b. Compare fractions by finding a common denominator.				
	c. Rewrite mixed numbers and improper fractions from one form to the other and represent each using regions, sets of objects, or line segments.				
	d. Represent commonly used fractions as decimals and percents in a variety of ways (e.g., models, fraction strips, pictures, calculators, algorithms).				
	e. Model and calculate equivalent forms of a fraction (including simplest form).				
	f. Rename whole numbers as fractions with different denominators (e.g., 5=5/1, 3=6/2, 1=7/7).				
Objective 1.3: **Use number theory concepts to develop and use divisibility tests, classify whole numbers to 50 as prime, composite, or neither, and find common multiples and factors.**	a. Identify patterns with skip-counting and multiples to develop and use divisibility tests for determining whether a whole number is divisible by 2, 3, 5, 6, 9, and 10.				
	b. Use strategies for classifying whole numbers to 50 as prime, composite, or neither.				
	c. Rewrite a composite number between 2 and 50 as a product of only prime numbers.				
	d. Find common multiples and factors and apply to adding and subtracting fractions.				
Objective 1.4: **Model and illustrate meanings of multiplication**	a. Represent remainders as whole numbers, decimals, or fractions and describe the				

and division.	meaning of remainders as they apply to problems from the students' environment (e.g., If there are 53 people, how many vans are needed if each van holds 8 people?).				
	b. Describe the effect of place value when multiplying and dividing whole numbers and decimals by 10, 100, and 1,000.				
	c. Model multiplication of fractions and decimals (e.g., tenths multiplied by tenths, a whole number multiplied by tenths, or a whole number with tenths multiplied by tenths) in a variety of ways (e.g., manipulatives, number line, and area models, patterns).				
Objective 1.5: **Solve problems involving one or two operations.**	a. Determine when it is appropriate to use estimation, mental math strategies, paper-and-pencil, and algorithms.				
	b. Make reasonable estimations of fraction and decimal sums, differences, and products including knowing whether results obtained using a calculator are reasonable.				
	c. Write number sentences that can be used to solve a two-step problem.				
Objective 1.6: **Demonstrate proficiency with multiplication and division of whole numbers and compute problems involving addition, subtraction, and**	a. Multiply and divide multi-digit whole numbers by a two-digit whole number with fluency and using efficient procedures.				
	b. Add and subtract decimals with fluency and using efficient				

multiplication of decimals and fractions.	procedures.				
	c. Add and subtract fractions with fluency.				
	d. Multiply fractions.				

Standard 2: Students will use patterns and relations to represent and analyze mathematical problems and number relationships using algebraic symbols.

Objectives	Indicators	Covered? Yes	Covered? No	Explanation of Coverage	Percentage of Coverage
Objective 2.1: Identify, analyze, and determine a rule for predicting and extending numeric patterns involving operations with decimals and fractions.	a. Analyze and make predictions about numeric patterns, including decimals and fractions.				
	b. Determine a rule for the pattern using organized lists, tables, objects, and variables.				
Objective 2.2: Use algebraic expressions, inequalities, or single operation equations to represent and solve simple real-world problems.	a. Use properties and the order of operations involving addition, subtraction, multiplication, division, and the use of parentheses to compute with whole numbers, decimals, and fractions.				
	b. Solve single operation equations involving a single variable.				

Standard III: Students will use spatial reasoning to recognize, describe, and analyze geometric shapes and principles.

Objectives	Indicators	Covered? Yes	Covered ?	Explanation of Coverage	Percentage of

			No		Coverage
Objective 3.1: Describe relationships between two- and three-dimensional shapes and analyze attributes and properties of geometric shapes.	a. Draw, label, and describe line segments, rays, lines, parallel lines, and perpendicular lines.				
	b. Draw, label, and define an angle as two rays sharing a common endpoint (vertex).				
	c. Classify triangles and quadrilaterals and analyze the relationships among the shapes in each classification (e.g., a square is a rectangle).				
	d. Relate pyramids and right prisms to the two-dimensional shapes (nets) from which they were created.				
	e. Analyze properties and attributes of solids (i.e., right prisms, pyramids, cylinders, cones) and describe them by the number of edges, faces, and vertices as well as the types of faces.				
Objective 2.2: Specify locations in a coordinate plane.	a. Locate points defined by ordered pairs of integers.				
	b. Write an ordered pair for a point in a coordinate plane with integer coordinates.				
	c. Specify possible paths between locations on a coordinate plane and compare distances of the various paths.				

Standard 3: Students will use spatial reasoning to recognize, describe, and analyze geometric shapes and principles.

Objectives	Indicators	Covered? Yes	Covered? No	Explanation of Coverage	Percentage of Coverage

Objective 3.1: Describe relationships between two- and three-dimensional shapes and analyze attributes and properties of geometric shapes.	a. Draw, label, and describe line segments, rays, lines, parallel lines, and perpendicular lines.				
	b. Draw, label, and define an angle as two rays sharing a common endpoint (vertex).				
	c. Classify triangles and quadrilaterals and analyze the relationships among the shapes in each classification (e.g., a square is a rectangle).				
	d. Relate pyramids and right prisms to the two-dimensional shapes (nets) from which they were created.				
	e. Analyze properties and attributes of solids (i.e., right prisms, pyramids, cylinders, cones) and describe them by the number of edges, faces, and vertices as well as the types of faces.				
Objective 3.2: Specify locations in a coordinate plane.	a. Locate points defined by ordered pairs of integers.				
	b. Write an ordered pair for a point in a coordinate plane with integer coordinates.				
	c. Specify possible paths between locations on a coordinate plane and compare distances of the various paths.				

Standard 4: Students will understand and apply measurement tools and techniques and determine surface area and volume of three-dimensional shapes.

Objectives	Indicators	Covered? Yes	Covered ? No	Explanation of Coverage	Percentage of Coverage

Objective 4.1: Recognize measurements are approximations, convert units of measurement, and solve problems involving measurement.	a. Recognize measurements are approximations and how differences in units affect precision.				
	b. Convert units of measurement within the metric system and convert units of measurement within the customary system.				
	c. Solve real-world problems involving measurement (i.e., time, money, volume, area, surface area).				
Objective 4.2: Recognize, describe, and determine surface area and volume of three-dimensional shapes.	a. Quantify volume by finding the total number of same-sized units of volume needed to fill the space without gaps or overlaps.				
	b. Recognize that a cube having a 1 unit edge is the standard unit for measuring volume expressed as a cubic unit.				
	c. Derive and use the formula to determine the volume of a right prism.				
	d. Relate the formulas for the areas of different polygons to the surface area of a right prism.				
	e. Derive the surface area of a right prism and express surface area in square units.				

Standard 5: Students will construct, analyze, and construct reasonable conclusions from data and apply basic concepts of probability.					
Objectives	**Indicators**	**Covered? Yes**	**Covered ? No**	**Explanation of Coverage**	**Percentage of Coverage**
Objective 5.1: Formulate and answer	a. Construct, analyze, and display data using an				

questions using statistical methods to compare data and propose and justify inferences based on data.	appropriate format (e.g., line plots, bar graphs, line graphs).				
	b. Recognize the differences in representing categorical and numerical data.				
	c. Identify minimum and maximum values for a set of data.				
	d. Identify and calculate the mean, median, mode, and range.				
Objective 5.2: **Apply basic concepts of probability.**	a. Describe the results of investigations involving random outcomes using a variety of notations (e.g., 4 out of 9, 4/9).				
	b. Recognize that outcomes of experiments and samples are fractions between 0 and 1 (inclusively).				
	c. Make simple predictions of an outcome in a simple experiment.				

Curriculum Coverage	**3**	**2**	**1**	**0**	**N/A**
Meets Core Standards and Objectives	80% of the state core objectives are covered. Objectives in instructional materials are clearly stated with measurable outcomes.	70% of the state core objectives are covered. Objectives in instructional materials are clearly stated with measurable outcomes.	50% of the state core objectives are covered.	Less than half of the state core objectives are covered.	
Content	Accurate information reflecting current mathematical knowledge. No content bias.	Some inaccuracies found, however information reflects current mathematical knowledge. No content bias.	Many inaccuracies were found on major mathematical concepts or content bias created problems with mathematical concepts.	Major inaccuracies found in mathematical content or concepts.	
Covers Process Skills	Materials support and encourage students to use mathematical process skills (i.e., problem solving, communication, reasoning, and proof, connections, representation).	Materials provide a range of activities with set outcomes. Process skills are mentioned but not incorporated into instructional process.	Materials provide a set of explicit step-by-step instructions. Limited amount of process skills mentioned.	No hands-on activities. No process skills mentioned.	
Age Appropriate	A wide range of activities to accommodate various developmental levels at a reasonable pace and depth of coverage. Includes age appropriate cross-curricular references (e.g., literature, software, etc.) Content organized so prerequisite skills and knowledge are developed before more complex skills.	Some activities are adaptable to the appropriate age level. Some cross-curricular activities are given. Some attention given to prerequisite skills and knowledge.	Limited developmentally appropriate activities. Prerequisite skills and prior knowledge are not sufficiently developed before more complex concepts are introduced.	Age appropriate issues are not addressed. Several activities are not based on appropriate levels.	
Pedagogically Sound	Facilitates a wide range of teacher and student activities that reflect various learning styles and individual needs of students. Includes a wide variety of pedagogical strategies for flexible grouping and instruction.	Encourages and assists teachers in addressing learning styles and individual needs of students. Includes various pedagogical strategies for flexible grouping and instruction.	Addresses differences in learning and teaching to a limited degree. Includes some pedagogical strategies for flexible grouping and instruction.	Hinders effective pedagogy.	

Physical Qualities	**3**	**2**	**1**	**0**	**N/A**
Durability	Materials are securely bound and reinforced.	Materials are hardbound adequately.	Materials have secure binding.	Materials have inferior binding.	
Print Size and legibility for intended grade level	Appropriate use of font size and format for intended grade level.	Font size adequate for intended grade level.	Font size and format too small or too large for age group.	Font size inconsistent.	
	Key words or phrases bold faced and/or italicized.	Some key words or phrases boldfaced and/or italicized.	Highlighting was used too much, emphasized too much information.	No key words or phrases boldfaced or italicized.	
Pictures, tables, and graphics	Appropriate and varied pictures, tables, and graphs. Graphs and tables are correctly labeled (e.g., titles, keys, labels).	Limited pictures, tables, and graphs. Some tables and graphs are not labeled correctly.	Very limited pictures, tables, and graphs.	Inappropriate pictures, tables, and graphs.	
Includes table of content, glossaries, and index	Tables of contents, indices, glossaries, content summaries, and assessment guides are designed to help teachers, parents/guardians, and students. Clearly represents concepts within the text.	Tables of contents, indices, glossaries, content summaries, and assessment guides are designed to help teachers, parents/guardians, and students, are adequate but not clearly defined concepts within the text.	Simple tables of contents, indices, glossaries, content summaries, and assessment guides are included.	Is missing one or more of the following: simple table of contents, glossaries, content summaries, assessment guides, or indices.	
Ancillary Materials	**3**	**2**	**1**	**0**	**N/A**
Teacher Materials	Lesson plans are easy to understand and implement. Are clearly written and presented with accurate concepts.	Most lesson plans are easy to understand and implement. Are clearly written and presented with accurate concepts.	Lesson plans are difficult to understand.	No lesson plans.	
	Mathematical terms and academic vocabulary are appropriately used.	Generally mathematical terms and academic vocabulary are appropriately used.	Some mathematical terms and academic vocabulary are appropriately used.	There is a lack of mathematical terms and academic vocabulary.	
	Incorporates integration suggestions to other curriculum areas.	Most integration supports other curricular areas.	Some integration support for other curricular areas.	No integration support available.	
	Investigations and problem solving activities focus on demonstrating mathematical principles in the content area.	Most investigations and problem solving activities focus on demonstrating mathematical principles in the content area.	Limited investigations and problem solving activities focus on demonstrating mathematical principles in the content area.	Investigations and problem solving activities are not related to content area or no investigation activities.	

Ancillary Materials cont.	**3**	**2**	**1**	**0**	**N/A**
Student Materials	Activities engage students in purposeful mathematics.	Most activities engage students in purposeful mathematics.	Some activities engage students in purposeful mathematics.	Activities do not develop the concept studied.	
	Activities incorporate use of process skills (i.e., problem solving, communication, reasoning and proof, connections, representation) for deep understanding of mathematical principles.	Activities encourage the use of process skills for deep understanding of mathematical principles.	Activities mention the use of process skills for deep understanding of mathematical principals.	Activities do not encourage process skills for deep understanding of mathematics.	
	Includes ideas to extend concepts in real world applications.	Some ideas are included to extend concepts in real world applications.	Limited real world applications.	No real world applications suggested.	
Parent Materials	Homework assignments and activities support classroom learning and are written so that parents/guardians can help their children.	Suggested strategies and activities to assist parents/guardians.	Limited activities available for parent/guardian use.	No parent/guardians activities included.	
	ESL strategies and activities that support classroom learning are provided in materials sent home to parents.	Some ESL strategies and activities are provided in materials sent home to parents.	A few ESL strategies and activities that may be sent home to parents are provided.	No ESL strategies and activities are provided.	
Manipulatives	Manipulatives are provided and are appropriate.	Manipulatives are provided.	Manipulatives are not provided.	Manipulatives are not part of the program.	
	Manipulatives can be replaced economically and locally.	Manipulatives can be replaced locally or by mail order.	Needed manipulatives can be obtained locally or special ordered.		
Technology (teachers)	**3**	**2**	**1**	**0**	**N/A**
Ease of Use	Menus are easy to read and follow.	Menus are generally easy to read and follow.	Menus are easy to read. Might have to read manual to understand operation of technology. (e.g., laser remote, software.)	Menus are not very descriptive. Hard to follow.	
	User-friendly installation requires a minimal level of computer expertise.	Installation requires little computer expertise.	Installation requires some knowledge or expertise.	Installation requires expertise.	
	Manual and directions are understandable.	Manuals and directions are simple.	Manuals are included.	No manuals or written instructional materials are provided.	

Technology (teachers) cont.	**3**	**2**	**1**	**0**	**N/A**
Audio/Visual attributes	High quality audio and visuals are correct and contribute to overall effectiveness of program.	Audio and visuals are of good quality. Complements program effectiveness.	Audio and visuals are acceptable. Aligned with program content.	Audio and visual defects are apparent. Distracts from program content.	
	Information is current and up-to-date.	Information is current.	Information is mostly current.	Information is out-of-date.	
Enhances learning experience	Enhances learning experience. Adds depth and diversity.	Offers some additional depth and diversity to learning experience.	Mild impact to overall learning experience.	Does not impact learning experience.	
Technology (students)	**3**	**2**	**1**	**0**	**N/A**
Calculator	Appropriate activities and materials are provided to explore and prove conjectures.	Activities help students learn use to use calculator to explore concepts	Activities to learn to use calculators	No use of calculators or calculators used to check work only.	
Computer	Software allows students to explore and prove mathematical conjectures	Software allows students to explore math conjectures	Software demonstrates processes for mathematical applications	Drill and practice only	
Universal Access	**3**	**2**	**1**	**0**	**N/A**
Content accurately reflects diverse population	Provides ways to adapt curriculum for all students (e.g., special needs, learning difficulties, English language learners, advanced learners.)	Provides some ways to adapt curriculum to meet assessed special needs.	Provides limited strategies to assist special needs students.	Inappropriate strategies to assist special needs students.	
	Accurate portrayal of cultural, racial, and religious diversity in society.	Mostly accurate portrayal of cultural, racial, and religious diversity in society.	Does not address diversity in society.	Inaccurate portrayal of diverse populations and society.	
Assessment	**3**	**2**	**1**	**0**	**N/A**
Provides a variety of assessment options	Multiple measurements of individual student progress at regular intervals ensuring success of all students.	Assessment requires students to apply some concepts.	Assessment requires students to apply few concepts.	Provides only paper and pencil assessment.	

Assessment cont.	**3**	**2**	**1**	**0**	**N/A**
Assessment tools	Scoring tools and rubrics in assessment package.	Some scoring tools and rubrics provided.	Very few assessment tools are provided.	Answer keys to paper and pencil assessments.	
Assessment alignment to objectives	Assessment is provided to assess 80% of stated objectives with a variety of assessment strategies and items.	Assessment is provided to assess 70% of stated objectives.	Assessment is provided to assess 50% of stated objectives.	Assessment is provided to assess less than 50% of stated objectives.	
Assessment for understanding	Assessment requires the application of ideas and concepts.	Assessment requires the application of some ideas and concepts.	Assessment requires the application of few ideas and concepts.	No application of ideas and concepts.	